

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents
United States Patent and Trademark
Office
Box PCT
Washington, D.C.20231
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 23 June 2000 (23.06.00)	Applicant's or agent's file reference SMR/P73161PC
International application No. PCT/GB99/03377	Priority date (day/month/year) 17 October 1998 (17.10.98)
International filing date (day/month/year) 11 October 1999 (11.10.99)	
Applicant ELLIOTT, Nicholas, Paul et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:

10 May 2000 (10.05.00)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was

☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

<p>The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland</p> <p>Facsimile No.: (41-22) 740.14.35</p>	<p>Authorized officer Juan Cruz</p> <p>Telephone No.: (41-22) 338.83.38</p>
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PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P73161PC		FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/GB99/03377	International filing date (day/month/year) 11/10/1999	Priority date (day/month/year) 17/10/1998	
International Patent Classification (IPC) or national classification and IPC G07F7/08			
Applicant ELLIOTT, Nicholas, Paul et al.			



1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 6 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 5 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 10/05/2000	Date of completion of this report 29.12.00
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Stratford, C Telephone No. +49 89 2399 2268 

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB99/03377

I. Basis of the report

1. This report has been drawn on the basis of *(substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments (Rules 70.16 and 70.17).)*:

Description, pages:

4-8	as originally filed		
1-3	as received on	12/09/2000	with letter of 08/09/2000

Claims, No.:

1-14	as received on	12/09/2000	with letter of 08/09/2000
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Drawings, sheets:

1/3-3/3	as originally filed
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2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB99/03377

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims 1-6, 9, 10, 13, 14
	No: Claims 7, 8, 11, 12
Inventive step (IS)	Yes: Claims 1-6
	No: Claims 7-14
Industrial applicability (IA)	Yes: Claims 1-14
	No: Claims

- 2. Citations and explanations**
see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

5.0 With reference to Section V

5.1 Reference is made to the following documents:-

D1: WO 80 02757 A (WINDERLICH H ;STOCKBURGER H (DE)) 11 December 1980 (1980-12-11)

D2: US-A-5 768 384 (BERSON WILLIAM) 16 June 1998 (1998-06-16)

This numbering will be adhered to throughout the application process.

5.2 Independent claim 1 describes a method of verifying the authenticity of goods, by means of public data and a security code applied to the goods. The document D1 (in particular Figure 1a and corresponding text) is regarded as being the closest prior art to the subject-matter of claim 1, and discloses (the references in parentheses applying to this document):

A method of verifying the authenticity of goods (see Abstract), wherein a set of public data (13) and a security code (14), which has been derived from said public data by means of a predetermined encryption algorithm (page 7, lines 27-31), are applied to the goods (11) and, upon receiving a request for verification, the public data applied to the goods is entered into a predetermined encryption algorithm to generate a verification code (page 10, lines 15-18) which is then compared to the security code to authenticate the goods (page 10, lines 19-28).

The difference between claim 1 and D1 is that the security code is generated using private data sets as well as the public data. To verify the goods, each private data set is entered into the encryption algorithm along with the public data. This generates a list of verification codes which are then compared with the security code.

This has both the advantage of increasing the security of the method (because potential counterfeiters would not have access to the private data) and also allowing the verifier to authenticate the goods without knowing beforehand which of the private data sets was used, thus allowing extra information about the goods to be determined.

D2 teaches including private data into the generation of the security/verification codes (see claim 1), but there is no suggestion to the skilled person from any of the prior art to hand of the generation of multiple verification codes for comparison with the security code.

Consequently, claim 1 meets the requirements of Article 33(2) and (3) PCT, in that it is both novel and has an inventive step.

- 5.3 Dependent claims 2-6 represent advantageous embodiments of the invention of claim 1, and therefore also meet the requirements of Article 33 PCT.
- 5.4 Independent claims 7 and 11, and their dependent claims 8 and 12 fail to meet the requirements of Article 33(2) PCT because they lack novelty. The origin of the private data is not a technical feature (and anyway any set of data could also be classed as a plurality of sets) and therefore does not distance the claims from D1. As is clear from Section 5.2, all remaining features are disclosed in D1. The feature of claims 8 and 12 is also known from D1 (see page 4, lines 14-17).
- 5.5 Dependent claims 9, 10, 13, and 14 are not inventive (Article 33(3) PCT) because they describe constructional details that are well known in the state of the art, and which would be selected by the skilled person according to individual requirements and circumstances.
- 5.6 The industrial applicability of all of the claims is self-evident, thus complying with the requirements of Article 33(4) PCT.

7.0 With reference to Section VII

- 7.1 The predetermined encryption algorithm in lines 7 of claim 1 should have the definite article.
- 7.2 Claim 5 should have referred to the private data sets rather than the private data.
- 7.3 The feature that 'a security code is applied to the goods' is known from D1, and

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB99/03377

should therefore be in the preamble of the independent claims (Rule 6.3(b) PCT).
Additionally, the features of the preambles of these claims are not provided with
reference signs placed in parentheses (Rule 6.2(b) PCT).

VERIFICATION METHOD

The present invention relates to a verification method and in particular, but not exclusively, to a method of verifying products to ensure that they are genuine and not counterfeit. The invention also relates to a method of marking goods for verification
5 purposes and to goods marked for verification purposes.

The problem of counterfeiting is enormous and affects a wide range of goods including, for example, pharmaceuticals and spare parts for aircraft. Counterfeiting is not only bad for the producer of genuine goods, resulting in lost sales and possible damage to reputation and goodwill, but can also result in danger to the public if the counterfeit goods
10 are not up to the quality of the genuine goods. For example, counterfeit pharmaceuticals may be ineffective or contain harmful substances and counterfeit aircraft parts may fail during use.

The sophistication of counterfeiting methods is such that it is often difficult or impossible for the consumer, wholesaler, retailer, importer or distributor to tell whether the goods
15 are genuine or counterfeit, and usually there is no way of verifying the authenticity of the goods.

It is an object of the invention to provide a verification method and a method of marking goods for verification purposes that mitigates at least some of the aforesaid problems.

According to the present invention there is provided a method of verifying the authenticity
20 of goods, wherein:

- a set of public data and a security code are applied to the goods, said security code having been derived from said public data by means of a predetermined encryption algorithm;
- and, upon receiving a request for verification, the public data applied to the goods
25 is entered into said predetermined encryption algorithm to generate a verification code, and said verification code is compared with the security code applied to the goods to assess the authenticity of goods.

The set of public data and the security code may be applied to the goods themselves or to packaging for the goods and the invention as defined by claim 1 is intended to include both of these possibilities.

The method allows the authenticity of the goods to be verified very quickly and simply, for example by means of a telephone call to the verifier. Counterfeiting of the goods is made very difficult by the fact that each goods item carries a unique security code number. The security code can be applied to the goods by ordinary printing processes at minimal cost. The need for expensive security devices such as holograms is avoided.

Advantageously, said security code is derived from said public data applied to the goods and private data held by the verifier and, upon receiving a request for verification, the public data applied to the goods and private data held by the verifier are entered into said predetermined encryption algorithm to generate a verification code, and said verification code is compared with the security code applied to the goods to assess the authenticity of goods.

The verifier may be either the manufacturer or any other body authorised by the manufacturer and the term "verifier" as used in the claims is intended to include any such body.

The private data may be related to public data, for example to batch number, so enabling the verifier to assign different sets of private data to different batches of products. Then, when a request for verification is received, the verifier can select the appropriate set of private data for the particular goods for which verification has been requested.

The use of private data in addition to the public data applied to the goods increases the security of the encryption process, making it more difficult to counterfeit the goods.

Advantageously, said private data includes a plurality of private data sets and, upon receiving a request for verification, each private data set is entered into said predetermined encryption algorithm together with the public data applied to the goods to generate a list of verification codes, and said list of verification codes is compared with the security code applied to the goods to assess the authenticity of goods.

The public data may include a batch number and/or date information, for example the expiry date or the manufacturing date and time.

The private data may include an item number, allowing the verifier to identify the goods item in question, or it may be a random or pseudo-random number.

- 5 Advantageously, the public data and the security code is applied to the goods by means of a digital printing process and is incorporated into the design printed onto the goods. This makes it more difficult for the goods to be counterfeited using plate-based printing techniques.

- 10 Advantageously, the public data and the security code is incorporated into the design printed onto the goods as reversed out characters, blends or tints. This makes it more difficult for the goods to be counterfeited using over-printing or over-coding techniques.

- 15 According to a further aspect of the invention there is provided a method marking goods to enable the authenticity of those goods to be verified, wherein a set of public data and a security code are applied to the goods, said security code having been derived by means of a predetermined encryption algorithm from said public data applied to the goods and a plurality of private data sets held by a verifier.

- 20 According to a further aspect of the invention there are provided goods marked for verification purposes, each of said goods including a set of public data and a security code applied to the goods, said security code having been derived by means of a predetermined encryption algorithm from said public data applied to the goods and a plurality of private data sets held by a verifier.

Embodiments of the invention will now be described by way of example with reference to the accompanying drawings, in which:

- 25 Fig. 1 is a perspective view of a medicine packet that has been marked for verification purposes,

Fig. 2 represents schematically a method of marking goods for verification purposes, and

Claims

1. A method of verifying the authenticity of goods, wherein:
 - a set of public data and a security code are applied to the goods, said security code having been derived from said public data by means of a predetermined encryption
5 algorithm;
 - and, upon receiving a request for verification, the public data applied to the goods is entered into said predetermined encryption algorithm to generate a verification code, and said verification code is compared with the security code applied to the goods to assess the authenticity of goods.
- 10 2. A method according to claim 1, wherein said security code is derived from said public data applied to the goods and private data held by the verifier and, upon receiving a request for verification, the public data applied to the goods and private data held by the verifier are entered into said predetermined encryption algorithm to generate a verification code, and said verification code is compared with the security code applied to the goods
15 to assess the authenticity of goods.
3. A method according to claim 2, wherein said private data includes a plurality of private data sets and, upon receiving a request for verification, each private data set is entered into said predetermined encryption algorithm together with the public data applied to the goods to generate a list of verification codes, and said list of verification codes is
20 compared with the security code applied to the goods to assess the authenticity of goods.
4. A method according to any one of the preceding claims, wherein the verifier maintains a log of requests for verification and, upon receiving a request for verification, compares the public data applied to the goods with the data held in the log to assess the authenticity of goods.
- 25 5. A method according to any one of the preceding claims, wherein the public data includes a batch number.

6. A method according to any one of the preceding claims, wherein the public data includes date information.
7. A method according to any one of the preceding claims, wherein the private data includes an item number.
- 5 8. A method according to any one of the preceding claims, wherein said public data and said private data is applied to the goods by means of a digital printing process and is incorporated into the design printed onto the goods.
9. A method according to claim 8, wherein said public data and said private data is incorporated into the design printed onto the goods as reversed out characters, blends or
10 tints.
10. A method marking goods to enable the authenticity of those goods to be verified, wherein a set of public data and a security code are applied to the goods, said security code having been derived from said public data by means of a predetermined encryption algorithm.
- 15 11. A method according to claim 10, wherein the public data includes a batch number.
12. A method according to claim 10 or claim 11, wherein the public data includes date information.
13. A method according to any one of claims 10 to 12, wherein said public data and said private data is applied to the goods by means of a digital printing process and is
20 incorporated into the design printed onto the goods.
14. A method according to any one of claims 10 to 13, wherein said public data and said private data is incorporated into the design printed onto the goods as reversed out characters, blends or tints.
15. Goods marked for verification purposes, each of said goods including a set of
25 public data and a security code applied to the goods, said security code having been derived from said public data by means of a predetermined encryption algorithm.

16. Goods according to claim 15, wherein the public data includes a batch number.
17. Goods according to claim 15 or claim 16, wherein the public data includes date information.
18. Goods according to any one of claims 15 to 17, wherein said public data and said
5 private data is applied to the goods by means of a digital printing process and is incorporated into the design printed onto the goods.
19. Goods according to any one of claims 15 to 18, wherein said public data and said private data is incorporated into the design printed onto the goods as reversed out characters, blends or tints.

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

REC'D 05 JAN 2001

WIPO

PCT

Applicant's or agent's file reference P73161PC	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/GB99/03377	International filing date (day/month/year) 11/10/1999	Priority date (day/month/year) 17/10/1998
International Patent Classification (IPC) or national classification and IPC G07F7/08		
Applicant ELLIOTT, Nicholas, Paul et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 6 sheets, including this cover sheet.

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3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 10/05/2000	Date of completion of this report 29. 12. 00
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Stratford, C Telephone No. +49 89 2399 2268 

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB99/03377

I. Basis of the report

1. This report has been drawn on the basis of *(substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments (Rules 70.16 and 70.17).)*:

Description, pages:

4-8 as originally filed

1-3 as received on 12/09/2000 with letter of 08/09/2000

Claims, No.:

1-14 as received on 12/09/2000 with letter of 08/09/2000

Drawings, sheets:

1/3-3/3 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
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3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
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- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB99/03377

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-6, 9, 10, 13, 14
	No:	Claims	7, 8, 11, 12
Inventive step (IS)	Yes:	Claims	1-6
	No:	Claims	7-14
Industrial applicability (IA)	Yes:	Claims	1-14
	No:	Claims	

2. Citations and explanations
see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB99/03377

5.0 With reference to Section V

5.1 Reference is made to the following documents:-

D1: WO 80 02757 A (WINDERLICH H ;STOCKBURGER H (DE)) 11 December 1980 (1980-12-11)

D2: US-A-5 768 384 (BERSON WILLIAM) 16 June 1998 (1998-06-16)

This numbering will be adhered to throughout the application process.

5.2 Independent claim 1 describes a method of verifying the authenticity of goods, by means of public data and a security code applied to the goods. The document D1 (in particular Figure 1a and corresponding text) is regarded as being the closest prior art to the subject-matter of claim 1, and discloses (the references in parentheses applying to this document):

A method of verifying the authenticity of goods (see Abstract), wherein a set of public data (13) and a security code (14), which has been derived from said public data by means of a predetermined encryption algorithm (page 7, lines 27-31), are applied to the goods (11) and, upon receiving a request for verification, the public data applied to the goods is entered into a predetermined encryption algorithm to generate a verification code (page 10, lines 15-18) which is then compared to the security code to authenticate the goods (page 10, lines 19-28).

The difference between claim 1 and D1 is that the security code is generated using private data sets as well as the public data. To verify the goods, each private data set is entered into the encryption algorithm along with the public data. This generates a list of verification codes which are then compared with the security code.

This has both the advantage of increasing the security of the method (because potential counterfeiters would not have access to the private data) and also allowing the verifier to authenticate the goods without knowing beforehand which of the private data sets was used, thus allowing extra information about the goods to be determined.

D2 teaches including private data into the generation of the security/verification codes (see claim 1), but there is no suggestion to the skilled person from any of the prior art to hand of the generation of multiple verification codes for comparison with the security code.

Consequently, claim 1 meets the requirements of Article 33(2) and (3) PCT, in that it is both novel and has an inventive step.

- 5.3 Dependent claims 2-6 represent advantageous embodiments of the invention of claim 1, and therefore also meet the requirements of Article 33 PCT.
- 5.4 Independent claims 7 and 11, and their dependent claims 8 and 12 fail to meet the requirements of Article 33(2) PCT because they lack novelty. The origin of the private data is not a technical feature (and anyway any set of data could also be classed as a plurality of sets) and therefore does not distance the claims from D1. As is clear from Section 5.2, all remaining features are disclosed in D1. The feature of claims 8 and 12 is also known from D1 (see page 4, lines 14-17).
- 5.5 Dependent claims 9, 10, 13, and 14 are not inventive (Article 33(3) PCT) because they describe constructional details that are well known in the state of the art, and which would be selected by the skilled person according to individual requirements and circumstances.
- 5.6 The industrial applicability of all of the claims is self-evident, thus complying with the requirements of Article 33(4) PCT.

7.0 With reference to Section VII

- 7.1 The predetermined encryption algorithm in lines 7 of claim 1 should have the definite article.
- 7.2 Claim 5 should have referred to the private data sets rather than the private data.
- 7.3 The feature that 'a security code is applied to the goods' is known from D1, and

**INTERNATIONAL PRELIMINARY
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International application No. PCT/GB99/03377

should therefore be in the preamble of the independent claims (Rule 6.3(b) PCT).
Additionally, the features of the preambles of these claims are not provided with
reference signs placed in parentheses (Rule 6.2(b) PCT).

VERIFICATION METHOD

The present invention relates to a verification method and in particular, but not
5 exclusively, to a method of verifying products to ensure that they are genuine and not
counterfeit. The invention also relates to a method of marking goods for verification
purposes and to goods marked for verification purposes.

The problem of counterfeiting is enormous and affects a wide range of goods including,
for example, pharmaceuticals and spare parts for aircraft. Counterfeiting is not only bad
10 for the producer of genuine goods, resulting in lost sales and possible damage to
reputation and goodwill, but can also result in danger to the public if the counterfeit goods
are not up to the quality of the genuine goods. For example, counterfeit pharmaceuticals
may be ineffective or contain harmful substances and counterfeit aircraft parts may fail
during use.

15 The sophistication of counterfeiting methods is such that it is often difficult or impossible
for the consumer, wholesaler, retailer, importer or distributor to tell whether the goods
are genuine or counterfeit, and usually there is no way of verifying the authenticity of the
goods.

WO 80/02757 describes a process for protecting sound recordings against counterfeiting.
20 The sound recording carriers are marked with a first data set and a second data set that
is related to the first data set. An inspection device is provided, which determines whether
the required relationship between the data sets applies.

US 5,768,384 describes a system for identifying, authenticating and tracking
manufactured articles. A label containing information relating to the articles is printed
25 with an encrypted bar code developed from some or all of that information. In order to
ascertain whether the article is genuine, the bar code is scanned and the encrypted
information is retrieved and compared against information on the associated documents.

It is an object of the invention to provide a verification method and a method of marking
goods for verification purposes that mitigates at least some of the aforesaid problems.

According to the present invention there is provided a method of verifying the authenticity of goods, wherein a set of public data and a security code are applied to the goods, said security code having been derived by means of a predetermined encryption algorithm from said public data applied to the goods and a plurality of private data sets held by a verifier
5 and, upon receiving a request for verification, each private data set is entered into said predetermined encryption algorithm together with the public data applied to the goods to generate a list of verification codes, and said list of verification codes is compared with the security code applied to the goods to assess the authenticity of goods.

{ The set of public data and the security code may be applied to the goods themselves or
10 to packaging for the goods and the invention as defined by claim 1 is intended to include both of these possibilities.

The method allows the authenticity of the goods to be verified very quickly and simply, for example by means of a telephone call to the verifier. Counterfeiting of the goods is made very difficult by the fact that each goods item carries a unique security code number.
15 The security code can be applied to the goods by ordinary printing processes at minimal cost. The need for expensive security devices such as holograms is avoided.

{ The verifier may be either the manufacturer or any other body authorised by the manufacturer and the term "verifier" as used in the claims is intended to include any such body.

20 The private data may be related to public data, for example to batch number, so enabling the verifier to assign different sets of private data to different batches of products. Then, when a request for verification is received, the verifier can select the appropriate set of private data for the particular goods for which verification has been requested.

The use of private data in addition to the public data applied to the goods increases the
25 security of the encryption process, making it more difficult to counterfeit the goods.

Each set of private data may be unique for each goods item, enabling the item number to be identified. This can help the verifier to track the activities of counterfeiters.

The public data may include a batch number and/or date information, for example the expiry date or the manufacturing date and time.

The private data may include an item number, allowing the verifier to identify the goods item in question, or it may be a random or pseudo-random number.

- 5 Advantageously, the public data and the security code is applied to the goods by means of a digital printing process and is incorporated into the design printed onto the goods. This makes it more difficult for the goods to be counterfeited using plate-based printing techniques.

- 10 Advantageously, the public data and the security code is incorporated into the design printed onto the goods as reversed out characters, blends or tints. This makes it more difficult for the goods to be counterfeited using over-printing or over-coding techniques.

- According to a further aspect of the invention there is provided a method marking goods to enable the authenticity of those goods to be verified, wherein a set of public data and a security code are applied to the goods, said security code having been derived by means of a predetermined encryption algorithm from said public data applied to the goods and a plurality of private data sets held by a verifier.
- 15

- According to a further aspect of the invention there are provided goods marked for verification purposes, each of said goods including a set of public data and a security code applied to the goods, said security code having been derived by means of a predetermined encryption algorithm from said public data applied to the goods and a plurality of private data sets held by a verifier.
- 20

Embodiments of the invention will now be described by way of example with reference to the accompanying drawings, in which:

- Fig. 1 is a perspective view of a medicine packet that has been marked for verification purposes,
- 25

Fig. 2 represents schematically a method of marking goods for verification purposes, and

Claims

1. A method of verifying the authenticity of goods wherein a set of public data is applied to the goods and, upon receiving a request for verification, the public data applied to the goods is entered into a predetermined encryption algorithm to generate a
5 verification code; characterised in that:
 - a security code (10) is applied to the goods, said security code (10) having been derived by means of a predetermined encryption algorithm (14) from said public data (8) applied to the goods and a plurality of private data sets (12) held by a verifier;
 - and, upon receiving a request for verification, each private data set (12) is entered
10 into said predetermined encryption algorithm (14) together with the public data (8) applied to the goods to generate a list of verification codes (24), and said list of verification codes (24) is compared with the security code (10) applied to the goods to assess the authenticity of goods.
2. A method according to claim 1, wherein the verifier maintains a log (30) of
15 requests for verification and, upon receiving a request for verification, compares the public data (8) applied to the goods with the data held in the log (30) to assess the authenticity of goods.
3. A method according to claim 1 or claim 2, wherein the public data (8) includes a batch number.
- 20 4. A method according to any one of the preceding claims, wherein the public data (8) includes date information.
5. A method according to any one of the preceding claims, wherein the private data (12) includes an item number.
6. A method according to any one of the preceding claims, wherein said public data
25 (8) and said security code (10) is incorporated into the design printed onto the goods as reversed out characters, blends or tints.

7. A method of marking goods to enable the authenticity of those goods to be verified, wherein a set of public data is applied to the goods for use in a subsequent verification process; characterised in that a security code (10) is applied to the goods, said security code (10) having been derived by means of a predetermined encryption algorithm
- 5 (14) from said public data (8) applied to the goods and a plurality of private data sets (12) held by a verifier.
8. A method according to claim 7, wherein the public data (8) includes a batch number.
9. A method according to claim 7 or claim 8, wherein the public data (8) includes
- 10 date information.
10. A method according to any one of claims 7 to 9, wherein said public data (8) and said security code (10) is incorporated into the design printed onto the goods as reversed out characters, blends or tints.
11. Goods marked for verification purposes, each of said goods including a set of
- 15 public data applied to the goods for use in a subsequent verification process; characterised in that each of said goods includes a security code (10) applied to the goods, said security code (10) having been derived by means of a predetermined encryption algorithm from said public data (8) applied to the goods and a plurality of private data (12) sets held by a verifier.
- 20 12. Goods according to claim 11, wherein the public data (8) includes a batch number.
13. Goods according to claim 11 or claim 12, wherein the public data (8) includes date information.
14. Goods according to any one of claims 11 to 13, wherein said public data (8) and said security code (10) is incorporated into the design printed onto the goods as reversed
- 25 out characters, blends or tints.

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference SMR/P73161PC	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/GB 99/ 03377	International filing date (day/month/year) 11/10/1999	(Earliest) Priority Date (day/month/year) 17/10/1998
Applicant ELLIOTT, Nicholas, Paul et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

1

☐ None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 99/03377

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 G07F7/08 G07D7/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G07F G07D G07C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X ✓	WO 80 02757 A (WINDERLICH H ; STOCKBURGER H (DE)) 11 December 1980 (1980-12-11) abstract; claims; figures page 7, line 10 -page 8, line 3 page 9, line 26 -page 10, line 28 ---	1, 5, 7, 10, 11, 15, 16
X ✓	US 5 432 506 A (CHAPMAN THOMAS R) 11 July 1995 (1995-07-11) abstract; claims; figures column 2, line 53 -column 3, line 40 ---	1, 2, 5-7, 10-12, 15-17
X ✓	US 5 768 384 A (BERSON WILLIAM) 16 June 1998 (1998-06-16) abstract; claims; figures column 2, line 24 - line 63 column 3, line 11 -column 5, line 15 --- -/--	1, 10-13, 15-18

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

27 January 2000

Date of mailing of the international search report

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Name and mailing address of the ISA

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X ✓	US 5 388 158 A (BERSON WILLIAM) 7 February 1995 (1995-02-07) abstract; claims; figures column 1, line 43 -column 2, line 63 column 4, line 38 - line 48	10,12,15
A	---	1,2
X,P ✓	EP 0 889 448 A (PITNEY BOWES) 7 January 1999 (1999-01-07) column 3, line 9 -column 4, line 1 column 4, line 40 -column 5, line 42; figures	1,10,12, 15
A	---	
A	US 3 833 795 A (INBAR D ET AL) 3 September 1974 (1974-09-03) abstract; claims; figures -----	1,3,10, 115

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 99/03377

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 8002757	A	11-12-1980	DE 2922882 A	11-12-1980
			AT 372211 B	12-09-1983
			AT 904880 A	15-01-1983
			BE 883681 A	01-10-1980
			CA 1161550 A	31-01-1984
			CH 651147 A	30-08-1985
			EP 0030237 A	17-06-1981
			GB 2062340 A,B	20-05-1981
			JP 56500784 T	11-06-1981
			SE 8100649 A	30-01-1981

US 5432506	A	11-07-1995	NONE	

US 5768384	A	16-06-1998	NONE	

US 5388158	A	07-02-1995	CA 2109554 A,C	21-05-1994
			EP 0600646 A	08-06-1994
			JP 7005809 A	10-01-1995

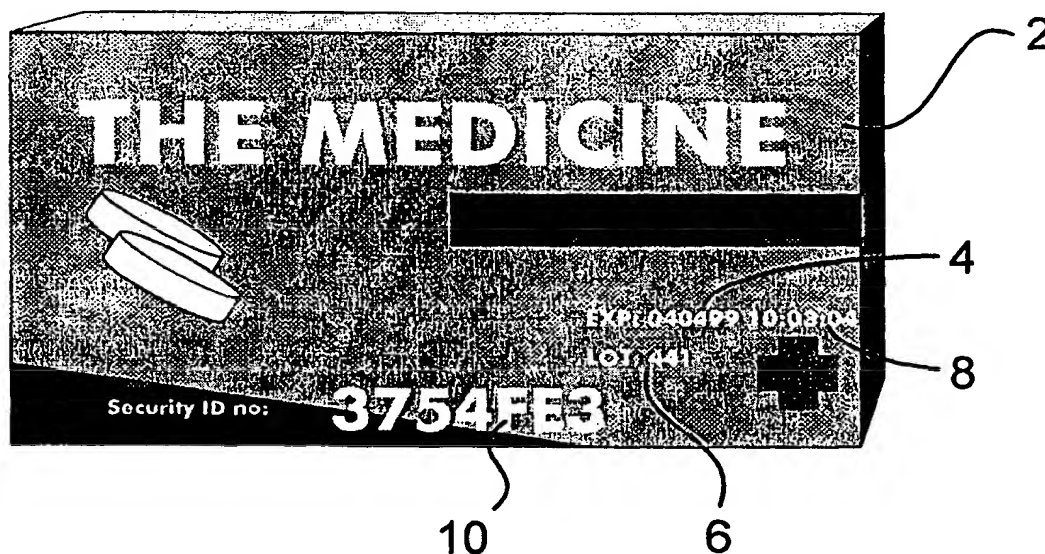
EP 0889448	A	07-01-1999	NONE	

US 3833795	A	03-09-1974	IL 37456 A	15-10-1975
			DE 2237911 A	01-03-1973
			FR 2149863 A	30-03-1973
			JP 48026346 A	06-04-1973
			NL 7210717 A	07-02-1973



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁷ : G07F 7/08, G07D 7/00	A1	(11) International Publication Number: WO 00/23954 (43) International Publication Date: 27 April 2000 (27.04.00)
(21) International Application Number: PCT/GB99/03377 (22) International Filing Date: 11 October 1999 (11.10.99) (30) Priority Data: 9822626.9 17 October 1998 (17.10.98) GB (71)(72) Applicants and Inventors: ELLIOTT, Nicholas, Paul [GB/GB]; Shoestring, Woodford Mill, Ringstead, Kettering Northants NN14 4DU (GB). ELLIOTT, David, William [GB/GB]; Rosedene, 2 Coleman Street, Raunds, Northants NN9 6NJ (GB). (74) Agent: RAYNOR, Simon, Mark; Urquhart-Dykes & Lord, Midsummer House, 411C Midsummer Boulevard, Central Milton Keynes, Bucks MK9 3BN (GB).		(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i>

(54) Title: VERIFICATION METHOD**(57) Abstract**

A method of verifying the authenticity of goods is provided, wherein a set of public data (4, 6, 8) and security code (10) are applied to the goods (2), said security code having been derived from said public data by means of a predetermined encryption algorithm. Upon receiving a request for verification, the public data (4, 6, 8) applied to the goods (2) is entered into the predetermined encryption algorithm to generate a verification code. The verification code is then compared with the security code (10) applied to the goods to assess the authenticity of goods.

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INTERNATIONAL SEARCH REPORT

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			CH 651147 A	30-08-1985
			EP 0030237 A	17-06-1981
			GB 2062340 A,B	20-05-1981
			JP 56500784 T	11-06-1981
			SE 8100649 A	30-01-1981
US 5432506	A	11-07-1995	NONE	
US 5768384	A	16-06-1998	NONE	
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			EP 0600646 A	08-06-1994
			JP 7005809 A	10-01-1995
EP 0889448	A	07-01-1999	NONE	
US 3833795	A	03-09-1974	IL 37456 A	15-10-1975
			DE 2237911 A	01-03-1973
			FR 2149863 A	30-03-1973
			JP 48026346 A	06-04-1973
			NL 7210717 A	07-02-1973